May 2021

ARMY COMMUNICATOR

The Future Fight

Plus:

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COL John T. Batson
Signal School Commandant

CSM Darien D. Lawshea
Signal Corps Regimental Command Sergeant Major

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On the Cover

Rangers prepare for night-time operations.
Photo provided by Maj. Damon Knauss

Signal Regimental Team

Welcome to May edition of the Army Communicator! We want to take a moment and thank you all for the incredible feedback we received for last month's special, "Ranger" themed issue. It was a labor of love and there was so much fantastic content, that some of it had to be carried over to this issue. We're excited about possibly doing other focused issues like this in the future, so if you're part of an organization that you think warrants a dedicated issue, reach out to us and let us know.

May has been designated as National Military Appreciation month in recognition of the role the US Armed Forces have played in the history and defense of our country. It culminates in Memorial Day, when we recognize those who have given all in support of freedom. I encourage you all this month to think about the importance of our profession of arms and to remember the men and women who have gone before.

May is also the unofficial beginning of summer, and that means more time spent outside and/or on trips. This is especially true this year, coming out of lockdown, which means many of the popular summer venues – beaches, parks, vacation spots – as well as the highways and interstates may very well be busier than usual. Statistically, Memorial Day Weekend is one of the most dangerous weekends of the year, so please keep safety first and foremost in your minds, especially if travelling.

Thank you again for everything you do each and every day. We hope you enjoy this issue, and until next month Pro Patria Vigilans!

COL John T. Batson
Signal School
Commandant

CSM Darien D. Lawshea
Regimental CSM

CW5 Garth R. Hahn
Regimental CWO

NETCOM DSD Director talks Data Science

Enrique Tamez Vasquez
NETCOM PAO

The renowned theoretical physicist, Stephen Hawking once said, "Computers will overtake humans with Artificial Intelligence (AI) within the next 100 years. When that happens, we need to make sure the computers have goals aligned with ours." Likewise, what most frequently drives AI in this day and age is data science and according to Hawking this is a big part of cyberspace with its own set of difficulties. "In a dazzlingly complex world, you have to be able to discern the meaning in the mess. We are, in a figurative and literal sense, awash with what we call data."

"What we're only now fully realizing is two-fold: the sheer quantity of data in any given domain; and the tools we need to make use of the information encoded in it," Hawking said.

As the U.S. Army continues to operate in a heavily contested cyber environment, the Network Enterprise Technology Command (NETCOM) is using data as a means to gain a strategic digital advantage over our cyberspace adversaries while synchronously applying data science to influence AI and gain foresight that achieves a dominant tactical
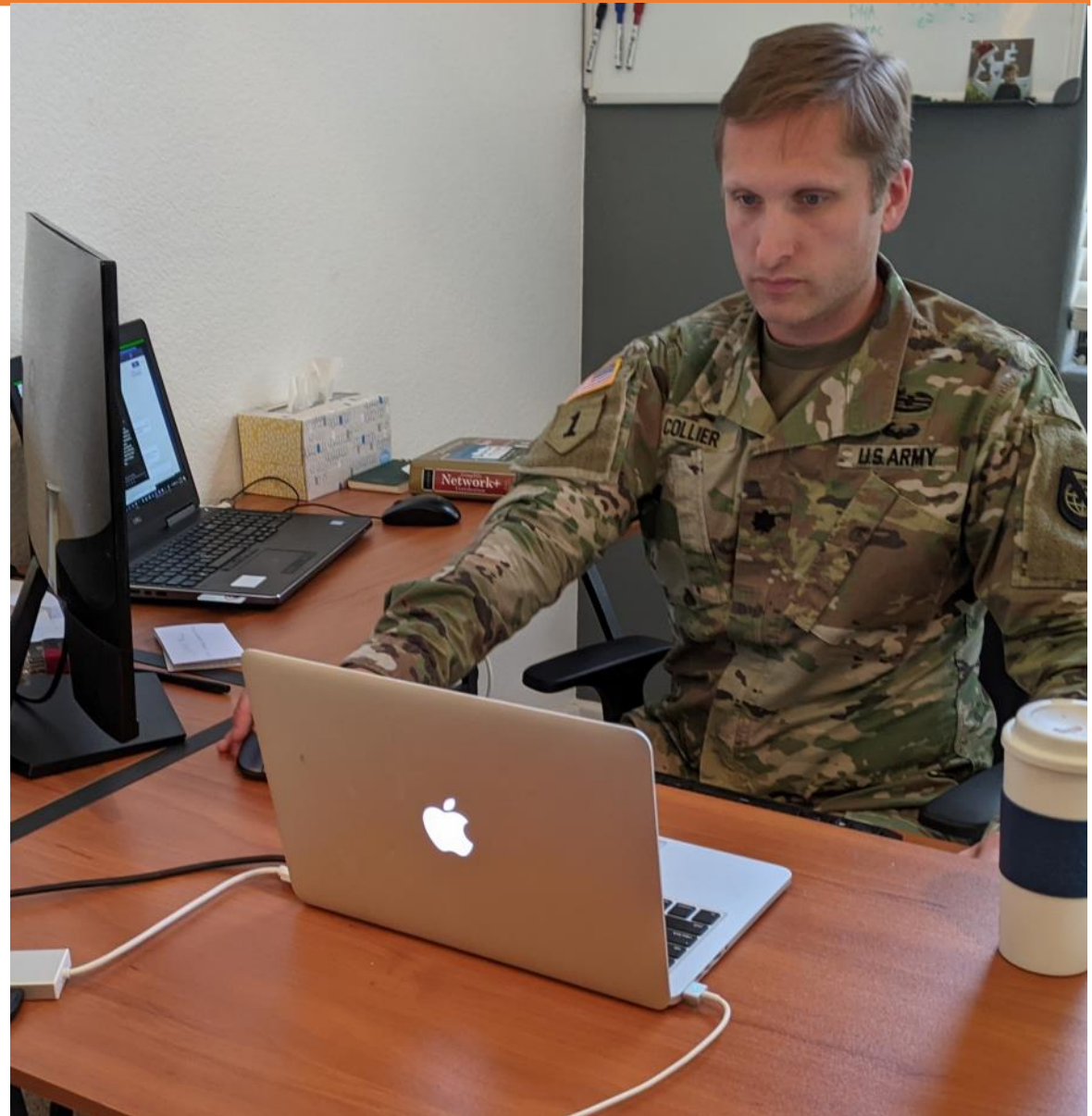
Lt. Col. Robert N. Collier, Senior Data Scientist at the NETCOM Phoenix Data Science Center (DSC) reviews his teams Army Analyst Data Challenge (AADC) submission during the 2020 competition.
Photo provided by NETCOM Phoenix Data Science Center

advantage within any Joint Area of Operations (JOA) requiring data-centric network enterprise support.

Furthermore, cyber security analysts often refer to data as the weapon of choice when addressing cyber threats by both peer and state sponsored adversaries.

"From a cybersecurity standpoint, the volume and velocity of threat and vulnerability data make it very difficult for analysts unaided by data science to secure the network or recognize and respond to threats," said Col. Eric S. Tollefson, NETCOM Director of Data Science.

Using data science to influence the Department of Defense's (DoD) inherent battlespace across all echelons of the Joint All Domain Operations (JADO) environment is not a new concept; thus, the DoD is currently unleashing data to advance the National Defense Strategy (NDS) and Digital Modernization (DM) initiatives. Presently, the DoD Data Strategy provides overarching vision, focus areas, guiding principles, essential capabilities, and goals necessary to transform

Graphic provided by NETCOM DSD

The Data Science Directorate: a Critical Enabler for NetOps in a Multi-Domain Operations Force

The DSD harnesses the enterprise asset of big data to provide cyber situational awareness, generate key insights, and improve network security and performance in support of worldwide operations.

Graphic by NETCOM DSD

the Department into a data-centric enterprise.

Supporting DoD's data-centric enterprise initiative is the NETCOM Data Science Directorate (DSD) via the Army's Data Plan.

"Although, the Army does not have a Data Science Strategy per-say, it does have the Army Data Plan and its corresponding HQDA EXORD 009-20, Army Data Plan Implementation in Support of Cloud Migration, as well as The Enterprise Data Analytics Strategy for Army Business: 2018-2022," Tollefson said. "As consumers of data, the DSD supports the Army Data Plan by developing data requirements essential to operationalize data science at NETCOM, which in turn helps the data management and governance bodies prioritize their efforts. With the addition of the NETCOM data management function to DSD's portfolio, we now also directly support that plan by implementing data management at the NETCOM level."

According to Tollefson, the NETCOM DSD also directly supports other key Army and DoD initiatives focused on AI and Machine Learning (ML). Nevertheless, as so happens with any inter-disciplinary field, data science remains a highly analytical and practical science that often has its share of challenges.

"For any given problem, we struggle with finding the necessary data (visibility), getting to the data (accessibility), knowing what's in the data source (understandability), and having high quality data (trustworthiness)," he said. "There are scores of examples we could point out. We spend a large portion of our time dealing with data-related challenges However, that's not unusual from what data scientists

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from elsewhere in the Army and DoD, as well as in industry, face; dealing with data issues is simply part of the process."

NETCOM's DSD focuses its mission on providing integrated and advanced analytics capabilities in order to enable objective decision-making. In addition, to meet mission requirements and to maintain a technological edge over peer-to-peer adversaries, the NETCOM DSD maintains an emphasis on its Lines of Effort, which include providing data analytics products and services, maximizing use of enterprise data, developing partnerships, building capabilities and managing talent.

"We have also recently picked up the mission to lead data management across the command. We have begun work on implementing that capability; however, this is still a work in progress," Tollefson said.

Not only has the NETCOM DSD remained postured and engaged with providing the command data science expertise, the directorate has made great strides in collaborating with the Army, DoD and institutions of higher learning during COVID-19.

"Throughout COVID, DSD coordinated, collaborated and connected in a distributed manner due to our organizational structure," Tollefson said. "In addition to our main body at Fort Huachuca, we are operating small offices in three satellite locations across the country (Phoenix, Monterey, and Pittsburgh), which were stood up for the purpose of partnering with academia and industry and providing access to the highly qualified talent pools of those major metropolitan areas."

"Moreover, in order to work together seamlessly, we had to implement tools and develop

Graphic by NETCOM DSD

processes for collaboration that prepared us well for the COVID-19 environment. The tools implemented by DoD and the Army during COVID-19 led to even greater improvements in our ability to communicate. Data science is absolutely a team sport, and collaboration is critical," he added.

Tollefson concluded that in order to maintain a team focused competitive posture, the team often competes in Army and DoD wide competitions designed to showcase the limitless talents of this unique NETCOM organization.

"DSD placed first in the Data Visualization category during the 1st Army Analyst Data Challenge (AADC) in 2019. That year, winners were selected from two categories – Data Visualization and Predictive Model. The visualization category judged how well teams represented their information and results for decision makers," he said. "Subsequently we placed 3rd in the AADC in 2020 but this year we are hoping to take 1st place again!"

As skillsets and multi-talented personnel help integrate and extrapolate data management tactics, techniques, and procedures (TTP's), the NETCOM DSD Team is remaining postured and ready to enable a data-driven enterprise that is fully capable of optimizing and transforming the Army's portion of the Department of Defense Information Network (DoDIN-A). This stance also allows NETCOM to sustain uninhibited support of Army and DoD data science initiatives. Likewise, maintaining a ready workforce requires the DSD team to maintain a critical alignment with industry as well as dynamic partnerships with academia.

"The NETCOM DSD maintains active and collaborative partnerships with some of the country's leading institutions of higher education. Examples of current and past partners include: Carnegie Mellon University (CMU), the Naval Postgraduate School (NPS), Arizona State University (ASU), the University of Texas at El Paso (UTEP), the United States Military Academy (USMA), and the University of Arizona," Tollefson said.

Moving towards the future, Tollefson added that, "the Army is currently moving from the industrial age to the information age, leveraging data as a strategic asset. The work we do is fundamental to that transformation in the cyber domain. NETCOM leaders past and present have recognized that data science and data management are integral to how the Army will fight, and DSD is at the cutting edge of that. Furthermore, we are a self-learning organization, continually re-evaluating how we do things to ensure that we evolve as both NETCOM and the cyber domain

Graphic by Amanda Pearson

Army Futures Command enables classified work from remote locations

DEVCOM C5ISR Center Public Affairs

The Army Futures Command (AFC) has implemented a capability that will enable approved Army personnel to remotely access classified networks via their commercial internet.

The solution, which was initiated in direct response to ongoing COVID-19 pandemic-related quarantine restrictions, was designed by the Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) Center – a component of AFC's Combat Capabilities Development Command – for the tenant organizations at Aberdeen Proving Ground (APG), Maryland.

"The pandemic environment has forced APG organizations to adapt and overcome challenges we could not possibly have foreseen. However, our mission in defense of our freedom and to empower our men and women in uniform demands nothing less. This solution will allow critical work to continue securely and seamlessly outside of traditional secure-processing areas, and it reflects APG's century-plus tradition of resilience and innovation on behalf of our warfighters," said Maj. Gen. Mitchell Kilgo, APG senior commander and U.S. Army Communications-Electronics Command commanding general.

The work aligns with the Army's vision of creating an environment where approved personnel can access classified applications and data from anywhere, noted Patrick C. Dedham, deputy to the commanding general, Army Network Enterprise Technology Command.

"This type of environment will allow the Army to extend the Secret Internet Protocol Router (SIPR) network to more places quickly without having to build out a lot of infrastructure. It will make us more mobile, efficient and effective," Dedham said.

The C5ISR Center's effort falls under Commercial Solutions for Classified (CSfC), a National Security

Maj. Kira C. Weyrauch, intelligence planner, Headquarters and Headquarters Battalion, 4th Infantry Division, reads over a fragmentary order in a tactical operations center during a warfighter exercise. The Commercial Solutions for Classified capabilities developed by the C5ISR Center aligns with the Army's vision of creating an environment where approved personnel can access classified applications and data from anywhere.
Photo by Sgt. Anthony Bryant

Agency (NSA) program that adapts commercial products for Department of Defense secure networking operations.

"CSfC protects classified data through multiple encryptions, firewalls and network layers to ensure point-to-point protection. It's a game changer from a transport and a communications capability. There are a lot of things that couldn't be done in the past that are now real, and leveraging the commercial supply chain can significantly decrease the Army's timeline for developing new solutions and systems," said Brian Lyttle, chief for the C5ISR Center's Cybersecurity Information Assurance Division.

The Center, which is approved by the NSA to conduct research and development into using approved commercial solutions to secure data and networks, has integrated and implemented 14 of the Army's 31 CSfC capabilities. This includes developing wireless classified networks, encryption tunnels between multiple networks, mobile access to classified data, and the DoD's first enterprise data-at-rest solution, which allows laptops to be considered unclassified when powered down to ease processing, storage and transportation requirements.

"What we've implemented at APG is unique because it combines three of the four NSA capability packages into a single solution: remote access, data at rest and an on-base transport solution to replace the traditional Protected Distribution System infrastructure," said Lyttle, who noted that the Center is developing similar remote SIPRNET capabilities for the North American Aerospace Defense Command and U.S. Northern Command at Peterson Air Force Base and the Cheyenne Mountain Complex, Colorado.

Lyttle said that the Center will use the lessons learned from these efforts to inform the Army as the service looks to employ enterprise-level CSfC solutions.

"This has the potential to reach a huge number of users across the Army and Joint enterprises. Some of this expertise is fairly specialized, so the more that we develop it, the easier it will be to implement a common solution across communities and functions. We'll continue to

Sgt. Kyle Plumley, an intelligence analyst for Joint Force Headquarters, works three laptop computers at Camp Atterbury, Ind. The Army Futures Command is enabling Army personnel at Aberdeen Proving Ground, Maryland, to remotely access classified networks via their commercial internet.
Photo by Staff Sgt. Chad Menegay
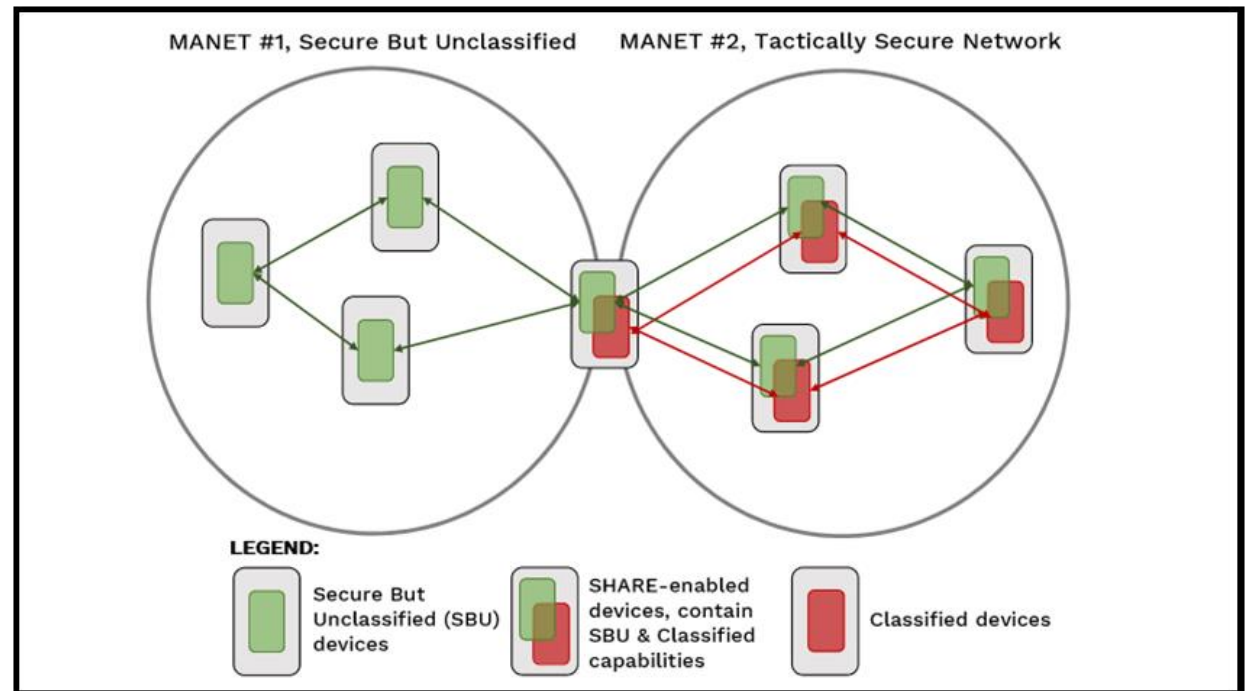
The Future Fight
Reimagining the Tactical Edge Network

Mat Cotner and Maj .Philip J. Smith
75th Ranger Regiment

As one of the leaders in the development of Tactical Mission Networks (TMN), the 75RR is very familiar with the two greatest constraints tactical networks face. The first is the accuracy and availability of information at the tactical edge, which we have been calling "data persistence". The second is the ability to dynamically add the devices of any number of mission partners, to the tactical edge network, according to mission requirements. This we are calling a "scalability" constraint. To solve these constraints, we are going to need a paradigm shift in the way we facilitate, secure, and implement Department of Defense Information Networks.

The ideal tactical network is a mesh of devices that can split, merge, and stretch however mission and terrain dictate. The traditional networking technologies used for this, namely TCP and UDP, were designed to facilitate connections between devices. In a mesh network that connection is always changing because devices are always moving. As a result, high latency and information loss is very common between devices at the tactical edge. This makes data persistence a huge problem for mission critical information. There is a networking technology called Named Data Networking (NDN), originally created by the National Science Foundation and currently under further development by Defense Advanced Research Projects Agency (DARPA) Secure Handhelds on Assured Resilient networks at the tactical Edge (SHARE) program that has the potential to make data persistent throughout the tactical edge

MANET #1, Secure But Unclassified   MANET #2, Tactically Secure Network

LEGEND:
Secure But Unclassified (SBU) devices
SHARE-enabled devices, contain SBU & Classified capabilities
Classified devices

network. NDN cares about information not devices, so it enables data to persist throughout the network. This allows information to be retrieved from the closest device on the network that has it, exponentially improving data persistence at the tactical edge.

NDN solves scalability constraints by securing the network's information instead of the network itself. Every packet that propagates across a NDN enabled network can be dynamically encrypted. This encryption restricts the processing of information to the devices that have the appropriate decryption keys for that packet. In this way, NDN can provide us a means to create a flat tactical network that all mission partners can connect to, while enabling each organization to maintain strict control of the information they generate. From a command and control perspective this has the potential to enable the organization with the authority to strike, to control the dissemination of information by controlling the encryption keys for the mission being executed.

The dynamic nature of a NDN enabled tactical network, requires it to have a new way of implementing device configurations. We are going to need a device management application that can quickly provision hundreds of NDN-enabled devices in a very short amount of time. Quite simply, we need the ability to wipe all our network devices, and then reprovision them with a new network plan and new encryption, between mission sets.

The 75RR has been leading the charge by continually putting NDN through its paces and proving its capabilities. The potential of this tech has already enabled the Regiment's unique mission requirements in terms of data persistence, which easily translates to the wider capability gaps at tactical levels in the US Army. In the future we will further experiment with, and develop against, NDN's potential to support cross domain solutions on tactical end user devices. Once that is accomplished in this pathfinder effort, NDN has the potential to solve many of the constraints felt by personnel working in Multi-Domain Operations, Joint All Domain Command and Control and those of us that must share information with mission partners at the tactical edge. Imagine a single end user device, that is capable of
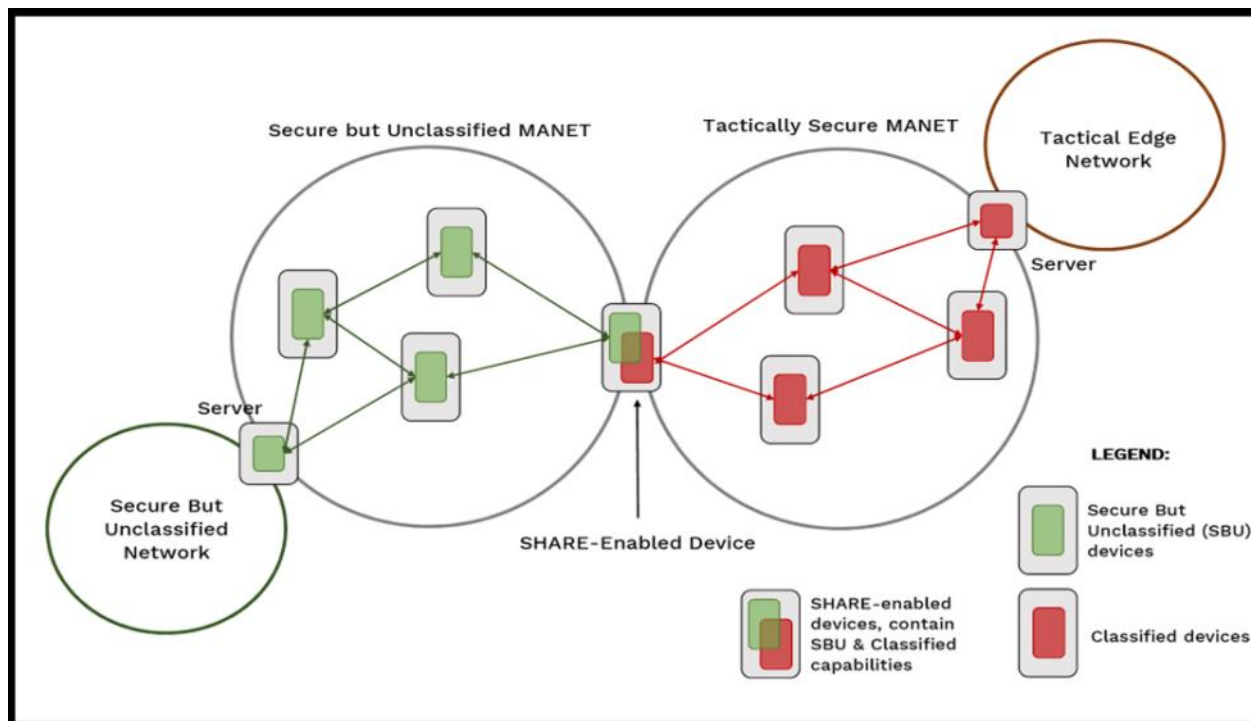
Low-cost tech prepares Army for new threats

DEVCOM Army Research Laboratory Public Affairs

Army researchers, as part of a national security team, are keeping a close eye on the evolution of new, low-cost threat emitters to improve the Army's ability to represent the adversary's equipment and actions accurately and dynamically.

Threat emitters provide a current, simulated battlespace environment designed to train allied warfighters to identify and defeat ever-changing adversaries.

The new tools will supplement current threat emitters used for research, training and testing at DOD sites, including the U.S. Army Intelligence Center of Excellence at Fort Huachuca and the 56th Fighter Wing at Luke Air Force Base. The goal is to develop dynamic, agile systems at a lower cost while replicating known and anticipated threats in the electromagnetic spectrum.

Dr. Eric Holder, an Army research psychologist with the U.S. Army Combat Capabilities Development Command, known as DEVCOM, Army Research Laboratory, said accurate threat representation is essential for Army research.

"Intelligence will be critical to upcoming operations in the multi-domain battlefield," Holder said. "Multi-domain battles are centered on knowing the enemy and the battlefield, and adapting to their strengths and weaknesses using all the domains available to conduct intelligence, surveillance and reconnaissance, targeting and determining the impact of actions taken."

Current threat emitters are expensive, some pricing as multi-million-dollar systems, but the new low-cost

Accurate threat representation from low-cost threat emitters such as this one based at Fort Huachuca, Arizona, is essential for Army research. Army researchers also rely on these emitters to paint a realistic picture as they prepare the DOD for the future operating environment. Photo by Airman 1st Class Leala Marquez)

solutions under development at Luke Air Force Base and Fort Huachuca can fill the gaps the more expensive systems do not fill right now yet typically cost between $15,000 and $30,000, he said.

Holder is part of a multi-disciplinary team comprised of federal government, university and industry members that is exploring ways to support the development of a Multi-Domain Operations and electromagnetic spectrum testing and training range complex at Fort Huachuca. The team, which also includes networking and sensors experts from Arizona State University, the National Security Innovation Network, the U.S. Army Electronic Proving Ground, Intelligence Electronic Warfare Testing Directorate and Luke Air Force Base, are exploring, adapting and integrating low-cost threat emitters developed by the university for the Air Force.

"Fort Huachuca is looking to leverage these emitters and adapt them to represent other threat capabilities assets and create a realistic testing and training environment in support of Army modernization and MDO readiness requirements," said Jeff Jennings, deputy to the commanding general, U.S. Army Intelligence Center of Excellence & Fort Huachuca.

This effort is synergized with other ongoing EMS range efforts to procure 5G mesh networks, leverage materials to contain emissions and conceal target signatures within an operational testing area and provide an environment to innovate on advanced concepts for

A UH-60 Black Hawk helicopter, operated by Soldiers with Alpha Company, 2-104th General Support Aviation Battalion, 28th Expeditionary Combat Aviation Brigade, flies over the 28th ECAB's area of operations in the Middle East.
Photo by Sgt. Andrew Johnson

interpreting, visualizing and optimizing intelligence and electronic warfare capabilities.

"If you don't accurately represent threats in both static and dynamic ways, how are you going to find them and figure out what they are doing in future operations?" Holder asked. "You need to train like you fight and because we research advanced capabilities, they should be tested on realistic signatures and behaviors."

67th ESB: Celebrating Legacy during Heritage Week

1st Lt. Ken Saxton
67th Expeditionary Signal Battalion

The Army Signal Regiment embraces legacy. The 67th Expeditionary Signal Battalion (ESB), one of four battalions in 35th Signal Brigade (Theater Tactical), is scheduled for inactivation this October. A one-of-a-kind Heritage Week is set for May 11-14 to bring alumni and Soldiers together to solidify our unit legacy, inform past and present servicemembers about significant milestones in our history and maximize their connection to our signal achievements over the past 79 years.

67th ESB has a proud legacy dating back to constitution on May 11, 1942. Just as the Signal Corps has developed a lot since the early methods that signal pioneer Albert Myer devised to convey messages, 67TH ESB has adapted in line with the Army's Signal Corps strategy. Soldiers deployed in support of numerous combat operations and humanitarian missions ranging from World War II to the War on Terrorism.

Heritage Week kicks off on May 11 to celebrate the unit's birthday with a cake cutting ceremony, Prayer Breakfast, and meet and greet tour of the Fort Gordon footprint with our alumni. There will be a history presentation followed by a walkthrough of our buildings and equipment that Soldiers used for recent signal support missions.

"We cement our legacy through storytelling, from the past to present," Lt. Col. Kevin Weber, 67th ESB Battalion Commander, said. "American Soldiers from past to present build deep connections, connections that enable unforgettable memories of the same appreciation for service."

Heritage Week continues with a Golf Scramble for teams of Soldiers and alumni. An Organizational Day, Battalion Run, and Combat Dining In conclude the week that is guaranteed to be full of fun celebration and cohesion.

In 1943, the battalion was affiliated with the New Jersey Bell Telephone Company at Camp Van Dorn, Mississippi. The battalion was transferred to Camp Bowie, Texas and then to the Louisiana Maneuver Area. There it participated in D-Series Exercises with the 97th Infantry Division. When Allied forces launched the invasion of Normandy in June 1944, the unit received orders to proceed to the European Theater within several months. By April 1945, the battalion had moved from England and France to Hilden, Germany to provide communications east and west of the Rhine River.

Graphic by 67th ESB

During this Rhineland Campaign, the battalion supported the 17th Airborne Division and the 94TH Infantry Division. In the Central Europe Campaign, 67th was part of the 22D Signal Corps supporting the 82D, 101st and 17th Airborne Divisions along with the 94TH Infantry Division. In August 1945, the battalion redeployed from Germany to Manila where it supported the 14th Corps and the 37th, 38th, and 6th Infantry Divisions in support of surrender operations. Several times Soldiers came into contact with the enemy during their missions. The battalion remained in the Philippine Islands until its 1946 inactivation.

67th Signal Battalion was allotted to the Regular Army March 2, 1967 and activated eight weeks later at Fort Riley, Kansas. The battalion's mission involved supporting ROTC summer leadership courses and Return of Forces to Germany (REFORGER) operations to enable readiness for global multi-domain contingency needs. Soldiers found time to install the new Army-owned cable TV system across the Fort Riley installation. With 204 personnel, the battalion began the complicated ordeal of moving troops and equipment to Fort Gordon, Georgia in December 1971. The new mission entailed supporting the Southeastern Signal School at Fort Gordon. 385th Signal Company (Support) was attached to the battalion, enabling the execution of signal commitments like National Guard summer training and Signal Officer Basic Course field training exercises.

67th ESB providing humanitarian mission support. Photo provided by 67th ESB

After dealing with personnel shortages, the unit became settled in its new Fort Gordon home and continued the testing and maintenance of the most modern signal equipment available at the time.

The year 1987 was a big turning point as the battalion fielded Digital Group Multiplex (DGM) and TRI-TAC communications systems. 67TH ESB used this equipment for the Joint Exercise Control Group Brim Frost at Fort Richardson, Alaska; III Corps for Roadrunner at Fort Hood, Texas; 7TH Transportation Group for Solid Shield at Fort Story, Virginia; and 1st Infantry Division for a Battlefield Command Training Program at Fort Riley, Kansas. In September 1990, the 67TH ESB was suddenly alerted for a worldwide deployment to support Operation Desert Shield in Saudi Arabia. The Soldiers supported major headquarters throughout EUCOM to include the Joint Forces Central Command, Army Central Command, Army Material Command, and the Marine Expeditionary Force. In 1992, the battalion was called upon to provide support to the Joint Task Force Headquarters in Miami, Florida for Hurricane Andrew relief support. Meanwhile, Soldiers deployed to support Operation

Restore Hope in Somalia. The FORSCOM unit continued deployments while maintaining a high state of combat and technical readiness. 67TH concluded the century upgrading automation equipment to Y2K compliance in conjunction with disaster relief missions across Central America.

The 2000s saw major technological transformation. 67th ESB fielded High Mobility DGM Assemblages (HMDA), DGM Antenna Mast Program (DAMPS) and CODEMS special circuits' equipment to become a more rapid deployable unit. The Single Shelter Switch (SSS) started a string of WIN-T upgrades that later included STT, JNN, CPN, SNAP, Phoenix and TROPO. Each company was able to provide baseline tactical network support to two brigade and six battalions at a time with additional line of sight equipment providing enhancing network capabilities. 67th ESB deployed to Kuwait and oversaw the deployment of four teams to Central America, two platoons to Africa and one company to the Poland AOR under 2D Signal Brigade (Theater). Network Modernization (NETMOD) and the conversion from HCLOS to TRILOS enabled higher network capacity and redundancy during two Army Warfighter exercises and over 100 signal support missions to XVIII Airborne Corps subordinate units.

The past history of 67th Expeditionary Signal Battalion speaks for itself. Soldiers and their families sacrificed to help others, to protect the nation, and to train new Army leaders in defense of freedom. 67th ESB truly lived up to its motto of being Rapid, Flexible and Reliable to enable C4I for warfighters across the globe.

The organization boasts an active alumni association of proud veterans. The administrator of the alumni Facebook group, Deron Lillard, has seen a major increase in alumni engagement. Similarly, the social media platforms have seen an over 300 percent increase in engagement over the past two years due largely to former servicemembers' interest. A quick scan of a reunion idea thread alone yields over 50 comments. Vets posted the companies and years they served. In fact, many former 67th ESB Soldiers and families still reside in Augusta and the greater Central Savannah River Area region.

Building a strong sense of community only deepens the connection to the Signal Regiment, both past and present. Although the COVID-19 pandemic restrictions halted last year's plans, there is no better timing to reinforce the "Lightning Force" heritage.

"This is the life we chose, it is not risk free. Don't ever apologize for being the best. We must be at our best when no one else can. Do the hard thing, do the impossible, be a leader, be someone to look up to, be someone to remember, be an American Soldier." Weber said. "Over the past 79 years, 67th ESB stood ready to answer our nation's call. We stand tall and confident as we posture for inactivation which allows the Signal Regiment to modernize the Unified Network supporting the
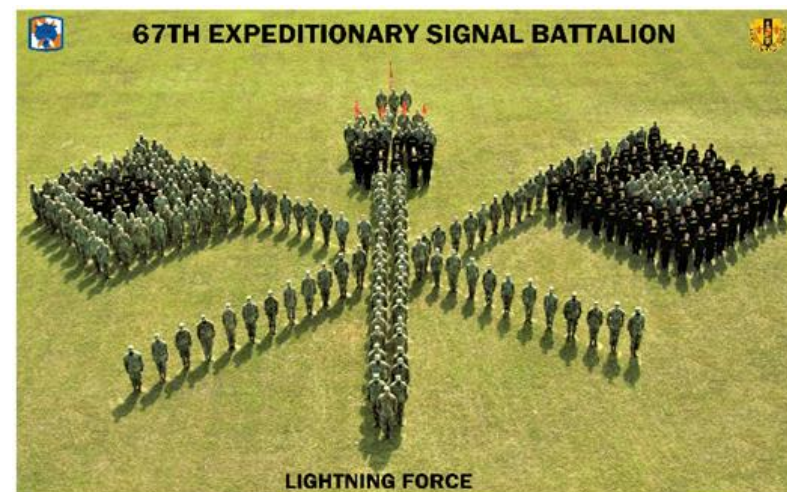
Graphic by 67th ESB

Signal joins USC Branch Fair

Cpt. Andrew DeLucio
Office Chief of Signal

The University of South Carolina ROTC division (known as the Gamecock Battalion) conducted its Annual Branch Fair April 8 on the USC campus.

During the event, students interacted with Officers and NCOs from each of the 17 Army basic branches as well as the South Carolina National Guard and Army Medicine recruiters. These officers and NCOs were able to provide insight on career opportunities within their respective fields.

The career fair consisted of a meet and greet, information briefs, processes for selection to branches, and ended with a leadership professional development brief from Maj. Gen. (Ret.) Todd McCaffery

Representing the Cyber Center of Excellence (CCOE) at Fort Gordon, Ga., The US Army Signal Corps was the only one to provide proponent representation. In so doing, not only were they able to provide insight on accessions and talent based branching actions, but were also able to discuss how the Cyber and Signal branches operate and integrate as a team to control and dominate cyberspace operations with respect to Department of Defense Information Networks.

Signal representation also came from Col. Patricia Sayles, a career Signaleer and Chief of the CCoE's Doctrine Division, and 2nd Lt. Earl Allen, an Operations Officer from 50th Expeditionary Signal Battalion at Fort Bragg, NC. With both being alumni of the USC ROTC program, they had relatable experiences that spanned across the Gamecock cadet population. During conversations with students, Sayles was able to highlight general and Signal specific doctrinal references for the professional development of the cadets and Allen was able to highlight his personal experiences thus far as a Signal Officer and manage expectations for cadets on things yet to come.

Reception to the booth was positive with a recommendation to continue this effort as well as grow the CCoE and USC ROTC relationship.

Cpt. Andrew DeLucio, 25A Career Program Manager, Col. Patricia Sayles, Chief of CCoE Doctrine Division, and 2nd Lt. Earl Allen, an Operations Officer from 50th Expeditionary Signal Battalion at Fort Bragg, NC, at the USC Branch Fair
Courtesy photo

The reduction and reorganization of the Signal Corps in the early 1920s

Steven J. Rauch
Signal Branch Historian

The war was over. In the early 1920s, the US Army faced the predicable challenge of drawing down, downsizing, or whatever contemporary name applied to the post-war process and actions undertaken with regularity after every US military conflict. From a wartime high of over four million men, the Army would shrink to below 200,000 in the next three years. Army leadership had to make hard choices about what capability was to be cut and what would remain for the unknown future. This meant the various branches, commands, and administrative organizations had to fight for their portion of the scant resources that remained. Among those fighting for their share – fair or not – was the US Army Signal Corps.

During World War I, the men and women of the Signal Corps had ensured communications systems supported commanders from the United States to the frontlines. Upon mobilization in 1917, the non-Aviation, or ground, component of the Signal Corps grew from 55 to 2,712 officers and 1,570 to 53,277 enlisted men. During the war, Signal Corps casualties were second only to the infantry with 301 killed, 1,721 wounded and 27 accidental deaths. Signal Soldiers, most assigned to division signal battalions, had received 59 Distinguished Service Crosses for their heroism and performance. The Signal Corps was justifiably proud of the contributions it made to victory. However, those contributions carried little weight after the war when the Army struggled with smaller peacetime manpower and spending levels. Thus began the crisis that caused many to wonder if a Signal Corps would still exist in the future Army.

On June 4, 1920, Congress approved legislation that established the foundation for military policy that lasted into the 1950s. The National Defense Act of 1920 was intended to address problems of the National Defense Act of 1916 that were revealed during the mobilization, organization and employment of forces for WWI. The 1916 NDA had erased the previous method of raising forces that had endured since 1792 and established an army based on three components – the Regular Army,

US Army and Signal Corps Personnel Strength (1920 – 1921)

National Defense Act of 1920

	Officers	Enlisted	Warrant Officers	Total	% of Total Army Strength
Total US Army	17,717	280,000	1,165	298,882	100%
Signal Corps	300	5,000	---	5,300	1.6%

June 1921 Appropriations Bill Enlisted Reductions

	Auth.	Cut 44%	Retain 56%	Allotted
Total US Army	280,000	123,200	156,800	156,831
Signal Corps	5,000	2,200	2,800	3,000

Reduced Enlisted Distribution by Missions

	Foreign Garrisons	Expeditionary Forces	Training Centers	School Detach.	NG ROTC USAR	Coast Defense	Overhead	Total
Total US Army	43,549	63,916	8,236	13,281	1,802	7,674	10,434	156,831
Signal Corps	876	1,003		129			992	3,000

Source: CSO Information Bulletin #3 (1 Aug 20) & #9 (1 Aug 21)

Figure 1

Graphic by Steven Rauch

US Army Division 1918 — 28,105 men
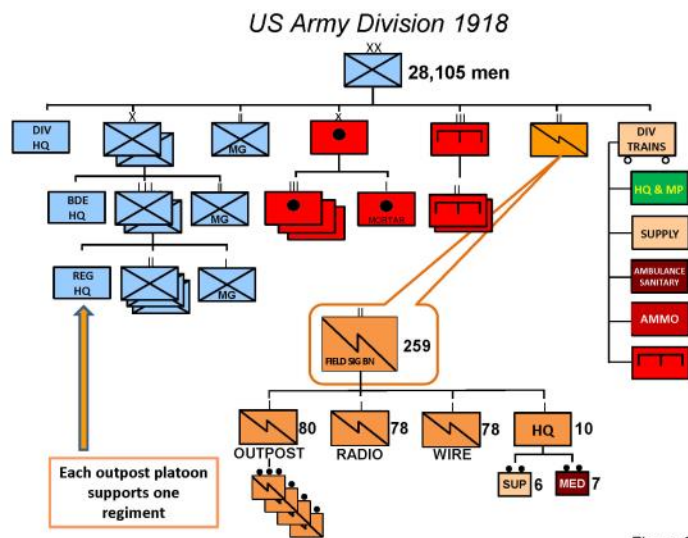
Source: Bond & Crouch, *Tactics* (1922); House, *Combined Arms Warfare* (2001)

Figure 2

Graphic by Steven Rauch

the National Guard, and the Organized Reserves. The 1920 NDA made some policy changes, such as establishing a centralized officer promotion list (doctors and chaplains excepted) and authorized three new branches: the Air Service, the Chemical Warfare Service, and the Finance Department. The active army strength was established at 17,717 officers, 280,000 enlisted and 1,165 warrant officers for a total 298,822 men. From this, the Army anticipated fielding nine infantry and two cavalry divisions.

For the Signal Corps, the 1920 NDA set enlisted strength for the branch at 5,000 men. However, it quickly got worse. Less than a year later, the 1921 appropriations act directed a further 44% cut to enlisted strength resulting in the Army retaining only 156,831 enlisted men. As a result, the Army was able to field only three infantry divisions and one cavalry division. The Signal Corps allocation came to 2,800 but it was allotted an additional 200 men for a total 3,000 enlisted for the entire branch. Since these reductions applied to the entire Army the Signal Corps was no better or worse off than other branches, but it was how those men were organized that was the most bitter pill to swallow.

Immediately after WWI, Army leadership began to apply lessons learned from that experience to prepare for future war. One of the most pressing was to determine the optimum personnel, organization, and equipment of the infantry division. The standard 1918 division was organized around firepower rather than mobility. Known as the "square" division, it consisted of four infantry regiments and two machine-gun battalions organized into two infantry brigades, along with a three-regiment artillery brigade. In all it numbered 28,105 men almost twice the size of divisions today. It required enormous amounts of logistics support, particularly transportation in the form of wagons, horses, mules, and motor vehicles all vying for road space often in constricted terrain.

A field signal battalion (FSB) enabled command and control of the division with 259 men commanded by a Signal Corps major. The FSB was organized around three functional companies. A wire company of 78 men provided support between the division HQ and each of the brigades. A radio company of 78 men provided four pack radios and a motorized set for the division cavalry, supply trains and general communications when wire was not practical. The outpost company consisting of 80 men had four platoons, each of which were attached to a regiment to assist with internal communications.

The infantry commanders at brigade, regiment and battalion however saw the injection of an FSB outpost platoon as promoting "a duality of control and responsibility" for communications. Because FSB men were viewed as technicians and not fellow "front-line" soldiers, this often lead to an "us and them" type of relationship. The combat arms leaders' desired solution to this issue was having soldiers from their own
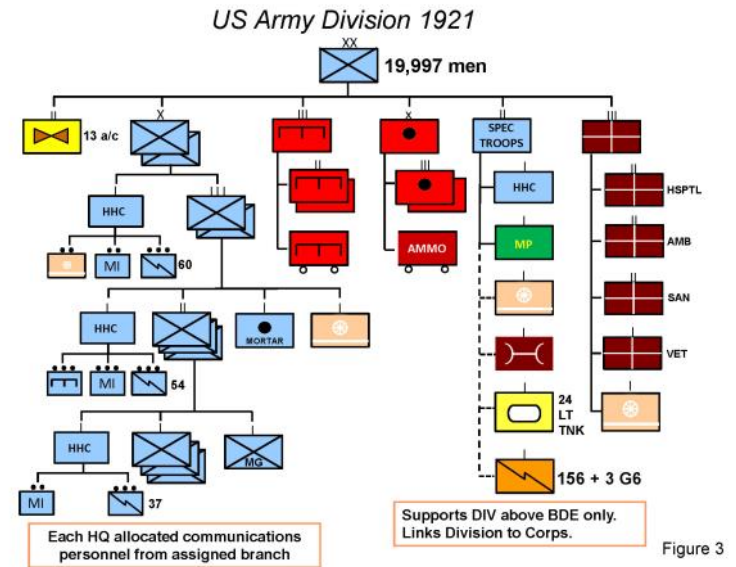
branch handle all communications from the brigade down to the battalion level.

In July 1919, a special Army Expeditionary Forces committee known as the Superior Board presented a report to the Army offering solutions to enhance mobility and reduce the size of the division without sacrificing too much firepower. The members of the board agreed the division was too big but split between two camps - one that desired to retain the two brigade/two regiment "square concept" and another that wanted to base firepower on three infantry regiments, known as the "triangular concept." The Secretary of the Army ordered another committee to examine the problem and it convened from June 22 to July 8, 1920. That committee also concluded the wartime division was too big, but favored retaining the square division base instead of the triangular formation. The reduction of manpower was to be obtained by reducing the number of divisional supporting troops and would rely on augmentation from corps levels assets as needed.

Regarding division communications organization and responsibility the committee recommended disbanding the FSB to reduce personnel and endorse the combat arms branches' desire to have all communications functions at the brigade and below performed by soldiers of their own branch. The new division would include one signal company of 156 men and the brigades, regiments and battalions would each have a communications platoon of 60, 54, and 37 men respectively from their own branch. For Signal Corps officers, this decision seemed like lunacy and meant the Signal Corps no longer controlled an integrated network from the front lines to Washington as it had during the war. The Chief Signal Officer, Maj. Gen. George O. Squire strongly objected to this change, but his protest fell on deaf ears and implementing orders were issued for the new organizational, doctrine and manning modifications.

The new division tables of organization reflected a division with 19,997 officers and men. There were still two infantry brigades each with two regiments, but the machinegun assets were dispersed to the lowest level. A light tank company was added along with a divisional aerial reconnaissance squadron of 13 aircraft. Medical assets were organized into a medical regiment providing ambulance, hospital, sanitary and veterinary services. A special troops battalion served as the administrative organization for the remaining support units that included an MP company, a supply and transportation company, a maintenance company and the signal company.

Given the influence and power of former division and brigade commanders, their desires were propagated well before organizational solutions were finalized. On May 18, 1920 *War Department General Orders* No. 29 were published that defined specific responsibilities for communications. Signal Corps troops would install, operate and maintain

US Army Division 1921

Graphic by Steven Rauch

(IOM) all lines of communications within the army, army corps, and division except for those units belonging to infantry, artillery, cavalry, engineer, tank, air service, and coastal artillery who would install, operate and maintain all communications at brigade level and below. The order also specified that the Signal Corps was to develop all signal equipment, publish technical manuals, and other devices as needed. It would procure, preserve, and distribute supplies as directed by authorization documents. Most importantly, the Signal Corps was to establish doctrine and procedures to ensure a uniformity of operations of communications equipment throughout the army. The Signal
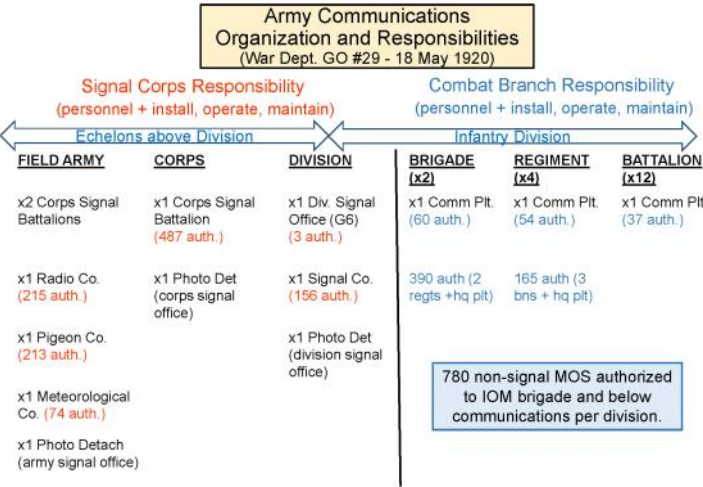
officers at each echelon of command (S6/G6) were still obligated to ensure integrated and coordinated communications were available to commanders when needed. GO 29 also stated, "All commanders will make the fullest use of the technical knowledge of their signal officers to the end that uniformity shall be obtained throughout the service."

Though the Signal Corps lacked control over 780 communicator positions at brigade and below, it still had a major mission at the division and above level of operations. The Chief Signal Officer *Information Bulletins* published in October and December 1921, provided extensive information to members of the branch about these developments. The publications described in some detail the remaining Signal Corps units in which branch personnel would perform their duties for most of the interwar years. These included:

Signal Company, Infantry Division. This unit included the division signal officer (G6) and two clerks, along with company elements. The company consisted of the HQ platoon (administration and supply), an operations platoon (message center, radio section, telephone

and telegraph section) and a construction platoon (2 construction sections). The supply platoon was large with one officer and 19 enlisted men who were responsible for handling all signal materials for all units of the division. The company mission was to IOM all communications systems and equipment of the division headquarters and operate under the direction of the division signal officer. The company was authorized six officers and 150 enlisted.

Corps Signal Battalion. Consisted of a headquarters company, a construction company (six construction platoons) and an operations company (message center, telephone, maintenance, and radio). One battalion was to be assigned to each corps headquarters and two to each army headquarters. The mission of the corps signal battalion was to IOM the wire, radio communications and message center services at the assigned HQ. The construction company was to build the necessary wire lines and central office exchanges of the wire system. The operations company was to operate and maintain the wire system and operate the radio network and the message center of the HQ. The

Army Communications Organization and Responsibilities
(War Dept. GO #29 - 18 May 1920)

Signal Corps Responsibility (personnel + install, operate, maintain)			**Combat Branch Responsibility** (personnel + install, operate, maintain)		
Echelons above Division			Infantry Division		
FIELD ARMY	**CORPS**	**DIVISION**	**BRIGADE (x2)**	**REGIMENT (x4)**	**BATTALION (x12)**
x2 Corps Signal Battalions	x1 Corps Signal Battalion (487 auth.)	x1 Div. Signal Office (G6) (3 auth.)	x1 Comm Plt. (60 auth.)	x1 Comm Plt. (54 auth.)	x1 Comm Plt. (37 auth.)
x1 Radio Co. (215 auth.)	x1 Photo Det (corps signal office)	x1 Signal Co. (156 auth.)	390 auth (2 regts +hq plt)	165 auth (3 bns + hq plt)	
x1 Pigeon Co. (213 auth.)		x1 Photo Det (division signal office)			
x1 Meteorological Co. (74 auth.)			780 non-signal MOS authorized to IOM brigade and below communications per division.		
x1 Photo Detach (army signal office)					

Source: CSO Information Bulletin #10 (1 Oct 21 & #11 (1 Dec 21)   Figure 4

Graphic by Steven Rauch

battalion was authorized 17 officers and 470 enlisted.

Radio Company. This unit was assigned only at Army level. It consisted of an Army HQ Press and Time section to copy commercial radio press news and check official chronometers of the HQ against the standard time signals sent out by official government radio stations. The school section operated the radio operator's school for lower echelon units as well as techniques of the army radio intelligence service. The control section supervised the radio operators working in the various radio nets within the army, by "listening in" on different nets and check on procedures followed by the operators. Any unauthorized activity that interfered with proper and efficient operation of the net was reported for remedial action. The long wave intercept section, the long wave goniometric section, the short wave intercept section, the aero-intercept section, the aero-goniometric section and the listening section formed the radio intelligence service for the army HQ. The company was authorized seven officers and 208 enlisted.

Pigeon Company. These units were assigned only to army level headquarters. They could be divided and employed at lower echelons as needed. It consisted of a HQ and supply section, a breeding loft section, three corps sections, and three reserve sections. It had 10 mobile pigeon lofts mounted on vehicles with 60-100 birds. The corps could further sub-divide these to support assigned divisions as needed. The breeding loft section took care of the feeding and training of young birds until they were ready for assignment to the corps and reserve sections. The company was authorized six officers and 207 enlisted.

Meteorological Company. This unit was assigned to theater level and described as "regional in character" and operated has a whole unit in the theater of operations. It was usually assigned to the army HQ and its mission was to obtain weather data for use by the army. The forecasting section was to make short time forecasts within the army area, using data obtained from the observation stations spread through the theater. The meteorological company had an authorization of five officers and 69 enlisted.

As far as the standard US Army division, it continued to change during the inter-war years to the point where it eventually evolved into the "triangular" concept that had been rejected in the early 1920s. During WWII, the triangular infantry division was the organization relied upon to close with and destroy the enemy in all theaters of operations. Many of those who served as junior leaders in the big, heavy WWI infantry division would assume command of its slimmer, though just as deadly, offspring that had matured through the 1920s and 1930s. That division still relied upon a Signal company for communications generally along the same lines as described in this article where corps level Signal Battalions provided support and capability that the division lacked organically. Thus by 1921, Army leaders hoped they had come to the right decisions based upon previous experience, budget limitations, technological developments and pure guesswork to project what was needed to fight a war in the future. Reducing communications capability by eliminating the division Signal battalion and Signal Soldiers at brigade and below was a decision that entailed risk, but one deemed sensible at that time by Army leaders preparing for war in the next 20 to 30 years.

In the next ARMY COMMUNICATOR

The Signal impact on Mission success